Amendments to the Drawings

The attached sheet of drawing corrections include as follows:

Sheet 1 of 5

Sheet 1 of 5 includes changes to Fig. 1. This sheet, which includes only Fig. 1, replaces the original sheet that also only included Fig. 1. In the replacement figure, the legend, "Prior Art" has been added.

Attachment:

Replacement Sheet 1 of 5

<div align="center">*Remarks:*</div>

In the present paper, Claims 1-18 are pending. Claims 1, 11, 12, 13, 14, 15, 16, 17 and 18 have been amended.

<div align="center">*Objections to the Title of the Invention*</div>

The title has been shortened to a title that is clearly indicative of the invention to which the claims are directed. As such, the applicants' respectfully request that the Examiner withdraw this objection.

<div align="center">*Objections to the Specification*</div>

The Examiner has objected to the specification under 37 C.F.R. §112, first paragraph. In particular, the Examiner argues that memory 136 cannot be a Read Only Memory (ROM) type memory as described in the applicants specification because the specification further describes the memory 136 as storing dynamic data, which is not suitable for use with a ROM type device.

The applicants respectfully traverse the Examiner's objection. As noted in paragraphs 28 and 29 of applicants' published patent application U.S. Pat. Pub. No. 2005/0066289, the memory 136 shown in Figs. 2 and 3 is "... representative of the overall hierarchy of memory devices". As further noted in the specification, "[t]he memory 136 can *include,* but is not limited to the following *types of devices*: cache, ROM, PROM, EPROM, EEPROM, flash memory, SRAM, and DRAM". (emphasis added)

That is, memory 136 does not, *per se,* represent a single type of memory technology that is utilized exclusively by the data processing system 130. Rather, the memory 136 may collectively be made up from several different types of memory, examples of which may include ROM, SRAM, DRAM, etc., as set out in the specification. For example, as further noted in paragraph 20 of applicants' published patent application U.S. Pat. Pub. No. 2005/0066289:

> As will be appreciated by one of skill in the art ... the present invention may take the form of a computer program product on a computer-usable storage medium having computer-usable program code embodied in the medium. *Any* suitable computer readable medium may be utilized *including* hard disks, CD-ROMs,

optical storage devices, a transmission media such as those supporting the Internet
or an intranet, or magnetic storage devices.

Moreover, as Fig. 3 illustrates, the memory 136 can be utilized to store several categories
of software and data, further clarifying that different categories may comprise different memory
types. Specifically, operating system information 252, application programs 254, data 256, the
I/O device drivers 258, and other software programs may reside in memory, designated generally
by the reference numeral 136.

The applicants believe that one of ordinary skill in the art to which the invention pertains,
would readily understand that data processing systems may be comprised of multiple memory
types and thus understand where ROM is appropriate for use in the data processing system if
utilized, and were some form of RAM or other dynamic memory is appropriate for use in the
data processing system. The applicants further believe that one of ordinary skill in the art would
recognize that a block diagram illustrating a data processing system and corresponding memory,
would not require undue experimentation to select a type of memory for utilized by a particular
implementation of the present invention.

In view of the clarifying comments above, the applicants believe that the specification is
clear within the meaning of 37 C.F.R. §112 first paragraph, and thus request that the objection be
withdrawn.

35 U.S.C. §101

Claims 1, 3-9 and 11-18 stand rejected under 35 U.S.C. §101 as being directed to non-
statutory subject matter.

Claim 1 has been amended herein to recite displaying the tree map visualization on a
display device, which is a concrete, practical and tangible result. In view of the amendments and
clarifying comments herein, the applicants believe that claim 1 is within the requirements of 35
U.S.C. §101 and the U.S.P.T.O. Interim Guidelines for Patent Subject Matter Eligibility.

Accordingly, the applicants request that the rejection to claim 1 and the claims that depend there from, including claims 3-9 under 35 U.S.C. §101 be withdrawn.

Claim 11 has been amended herein such that the preamble now recites a system for displaying a tree map visualization. Further, claim 11 has been amended herein to recite …a processor, a memory device, program code resident in the memory device, the program code executable by the processor to display on a display device…

The recitation of structural aspects including a processor, display and memory having code thereon which is executable by the processor, defines a system within the requirements of 35 U.S.C. §101. Accordingly, the applicants request that the rejection to claim 11 and the claims that depend there from, including claims 12-16 under 35 U.S.C. §101 be withdrawn.

Claim 17 has been amended herein to recite:
…processor means for prioritizing the data in the data set … stored in a memory means so as to associate a priority with respective elements of the data in the data set…
…display means for displaying the tree map visualization on a display device.

The recitations of a processor means, memory means and display means defines the claim as a system within the requirements of 35 U.S.C. §101 and the U.S.P.T.O. Interim Guidelines for Patent Subject Matter Eligibility. Further, the recitation of a means for displaying a tree map visualization on a display device recites a concrete, practical and tangible result of the recited processor means functions. In view of the amendments and clarifying comments herein, the applicants request that the rejection to claim 18 under 35 U.S.C. §101 be withdrawn.

Claim 18 has been amended herein to recite:
…a computer-usable storage medium having computer readable program code embodied therewith, the computer readable program code comprising:
computer readable program code configured to …display the tree map visualization on a display device.

The recitation of computer readable program code that is embodied on a computer readable storage medium is within the requirements of 35 U.S.C. §101 and the U.S.P.T.O.

Interim Guidelines for Patent Subject Matter Eligibility. Further, the recitation of computer readable program code configured to display the tree map visualization on a display device recites a concrete, practical and tangible result. In view of the amendments and clarifying comments herein, the applicants request that the rejection to claim 18 under 35 U.S.C. §101 be withdrawn.

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35 U.S.C. § 112, paragraph 1

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Claim 17 stands rejected under 35 U.S.C. § 112, first paragraph. The basis for the Examiner's rejection mirrors the objection to the specification addressed above.

The applicants respectfully traverse this rejection. As set out in greater detail above in the discussion with regard to the objection to the specification, the applicants believe that one of ordinary skill in the art to which the invention pertains would readily understand that data processing systems may be comprised of multiple memory types and thus understand where ROM, RAM and other types of memory are appropriate for use in a data processing system as set out in greater detail above and as described by the functions described in the specification.

In view of the clarifying comments herein, the applicants respectfully request that the rejection of claim 17 under 35 U.S.C. § 112, first paragraph, be withdrawn.

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35 U.S.C. §103

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Claims 1-5 and 7-18 stand rejected under 35 U.S.C. §103 as being unpatentable over U.S. Pat. Pub. No. 2003/0158846 to Ikehata (hereinafter, '*Ikehata*') in view of U.S. Pat. Pub. No. 2003/0085931 to Card et al. (hereinafter, '*Card*').

According to the M.P.E.P. §706.02(j), to establish a *prima facie* case of obviousness, the prior art reference must teach or suggest all the claim limitations. It is the applicants' position that the art does not support the rejections to the claims as amended herein, thus a *prima facie* case of obviousness has not been established. Accordingly, the applicants respectfully request that the rejections are withdrawn.

With respect to claim 1, *Ikehata* in combination with *Card* fails to teach or suggest at least:

> prioritizing the data in the data set so as to associate a priority with respective elements of the data in the data set…generating the tree map visualization based on the data set where a location of boxes in the tree map visualization is based on the priority associated with the corresponding element…

As will be described in greater detail below, and as the Examiner points out on page 8 of the Office action mailed 4/10/2007, *Ikehata* discloses arranging boxes based upon size. *Card* discloses changing the size of a node in a hierarchical graph based upon a priority such as the user's degree of interest in that node. However, even when these references are combined, the disclosures of sorting boxes based upon size with no teaching or suggestion of prioritizing the *underlying data* in the data set (*Ikehata*) in combination with affecting size of a node based upon priority *without* otherwise rearranging or changing the location of nodes within a hierarchical graph (*Card*) fails to teach or suggest generating a tree map visualization where … the location of the boxes within the tree map are based upon a priority associated with the corresponding element.

Ikehata teaches methods of displaying data where rectangular bounding boxes are displayed in near rectangular shape[1]. However, there is no teaching or suggestion in *Ikehata* of selecting a location for the various data boxes based upon a priority that is associated with the corresponding underlying data elements.

To the contrary, *Ikehata* arguably teaches away from locating boxes based upon a priority associated with a corresponding element. For example, in *Ikehata,* rectangles in each "strip region" of the visualization are ordered such that rectangles corresponding data which are adjacent to each other in the underlying statistical data, are also adjacent to each other in the image[2]. In this regard, the "statistical properties" that the Examiner refers to on page 9 of the Office action mailed 4/10/2007 *is* the underlying data itself.

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[1] See for example, *Ikehata Abstract, paragraph 16, 49.*
[2] See for example, *Ikehata, paragraph 50*

In *Ikehata,* the rectangles are arranged in a line-up order according to the underlying data (underlying statistical data to be viewed in the display). Once the rectangles are arranged (ordered), the shapes and the arrangements of the respective rectangles are rearranged to form strip regions such that an aspect ratio of a predetermined rectangle among a plurality of the adjacent rectangles in a strip region approximates to one. Thus, the rectangles may be arranged based upon size (descending or ascending) of the individual data in the statistical data reflected therein. Moreover, the shapes and the arrangements of the respective rectangles (the geometry of the positioned rectangles) may be adjusted such that the aspect ratio of the rectangle having the farthest aspect ratio from one among the plurality of adjacent rectangles is improved[3].

In *Ikehata,* long, thin, rectangles that may result based upon the size of classes of underlying data are replaced by rectangles that more closely approximate a square shape, thus making it easier to visually compare two or more rectangles for size. However, the visualization in *Ikehata* conveys only one or two characteristics of the underlying statistical data. That is, the size of the class of statistical data, as illustrated by the size of the rectangle, and *possibly* the color of the rectangle may represent another characteristic of the underlying data. However, rectangle position in the tree map is based upon adjacent underlying data. There is no teaching or suggestion of positioning or otherwise locating boxes in the tree map visualization based on a priority associated with the corresponding element.

Card discloses a visualization for a hierarchically linked information[4]. Thus, *Card* does not disclose a tree map visualization comprising rectangles at all. The hierarchical visualization is based upon a calculation of a degree of interest (DOI) for identified focus nodes in the hierarchy. Notably, the degree of interest affects the size of a node in the hierarchical display. However, the position of each node is dependent upon its associated hierarchical links[5]. In this regard, each node represents an information unit and the link represents a relationship amongst

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[3] See *Ikehata, paragraphs 51-54.*
[4] See for example, *Card,* Abstract
[5] See *Card,* paragraphs 14-16.

the different nodes.

In *Card*, the degree of interest calculation estimates the user's interest in the data, which can be dynamically adjusted, e.g., based on available display resource such as the viewable area of a computer display or the size of a "window" on the display. The "degree of interest" refers to a value attributed to a particular node with respect to some focus node that treats the children of a parent node as ordered and assigns fractional degree of interest offsets to the children based on order distance from the focus node. The farther the sibling is from the focus node based on the ordering, the more the fractional decrement in its degree of interest. Further, the visualization element can decide which sibling nodes to compress and how to compress them.

As pointed out by the Examiner, nodes in a hierarchical graph will typically be of different sizes. As nodes get smaller, there is less room to display the underlying information. As such, information displayed on the nodes is ranked by priority so that more information is displayed for relatively higher priority nodes. Thus, information can be aggregated, abbreviated, illustrated with symbols, deleted, rotated, etc., to visualize relatively lower priority nodes.[6]

However, teaching that a priority scheme can be used to determine the size and/or compression of visual elements in a hierarchical graph where nodes have fixed positions relative to their parent and children nodes fails to teach or suggest generating the tree map visualization based on the data set where a location of boxes in the tree map visualization is based on the priority associated with the corresponding element. In other words, there is no teaching or suggestion that the locations of nodes or siblings of nodes are relocated within the tree graph based upon the established priority. Rather, the size/compression is determined based upon priority.

In other words, in *Card*, changing the priority of nodes, e.g. by updating the degree of interest of one or more nodes *will not* correspondingly change the location of nodes within the visualization. Rather, the size or focus of the nodes will change. In *Ikehata,* there is no teaching

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[6] See for example, *Card*, paragraphs 43, 86-89.

or suggestion of prioritizing *the underlying data* in the data set as claimed. As such, the visualization will always attempt to generate the map so that boxes have an aspect ratio as close to 1 (square) as possible, thus the locations of the boxes will be based upon aspect ratio and size and not on a priority associated with the underlying data.

In tree map visualizations in general, two characteristics of the underlying data are typically illustrated, that being size and color of the rectangles. However, the claimed invention further recites prioritizing the data in the data set so as to associate a priority with respective elements of the data in the data set…and …generating the tree map visualization based on the data set where a location of boxes in the tree map visualization is based on the priority associated with the corresponding element. As such, a third characteristic is displayed in the tree map[7]. This aspect is neither taught nor suggested by the combination of references cited by the Examiner.

In view of the amendments and clarifying comments herein, the applicants respectfully request that the rejections to claim 1and the claims that depend there from 35 U.S.C. §103, be withdrawn.

Claims 11, 17 and 18 have been amended herein to recite and/or otherwise recite elements analogous to those set out in claim 1. As such, the arguments above with reference to claim 1 apply by analogy to claims 11, 17 and 18.

In view of the amendments and clarifying comments herein, the applicants respectfully request that the rejections to claims 11, 17, 18 and the claims that depend there from 35 U.S.C. §103, be withdrawn.

Conclusion

For all of the above reasons, the applicants respectfully submit that the above claims recite allowable subject matter. The Examiner is encouraged to contact the undersigned to

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[7] See for example, applicants' U.S. Pat. Pub. No. 2005/0066289, paragraphs 12, 36.

resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,

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